

REMARKS

Claims 1-24 are pending. The Examiner is thanked for performing a thorough search.

Objection to Drawings

In paragraph 1 of the Office Action, the drawings, e.g., FIG. 2D, FIG. 2B, FIG. 3B, were objected to. Applicant has corrected FIG. 2d and amended the specification to recite the proper reference numbers. FIGS. 2b and 3b do not need to be amended because the amendment to FIG. 2D resolved the conflict between the reference numbers appearing on these figures. Therefore, Applicants believe that this objection has been addressed.

In paragraph 2 of the Office Action, the drawings FIG. 2C and FIG. 2D were objected to. Applicants have corrected FIG. 2C and have amended the specification to recite the proper reference numbers. Therefore, Applicants believe that the objection to reference number 281 not being in FIG. 2C has been addressed. Concerning reference number 295, although reference number 295 does not appear on FIG. 2d reference number 295 does appear in FIG. 2b. Therefore, Applicants traverse the objection to reference number 295 not being in FIG. 2d.

In paragraph 3 of the Office Action, Figure 1 was objected to for not having the legend "Prior Art." Figure 1 has been amended to include the legend "Prior Art." Therefore, Applicants believe that the object to Figure 1 has been addressed.

In paragraph 4 of the Office Action, FIG. 2C is objected to because a reference number is unreadable. The reference number in FIG. 2C and in the

specification has been amended. Therefore, Applicants believe that the object to FIG. 2c has been addressed.

Objection to Specification

In paragraph 5 of the Office Action, the specification is objected to for informalities. The blanks in page 2, line 34 and page 10, line 16 have been amended to address this informality. Therefore, Applicants believe that the objection to the specification has been addressed.

Objection to Claims

In paragraph 6 of the Office Action, Claims 6, 8, 15, and 18 were objected to for informalities. Claims 6, 8, 15, and 18 have been amended to address these informalities. Therefore, Applicants believe that the objection to the claims has been addressed.

102 Rejection

Claims 11 and 17

In paragraph 8 of the Office Action, Claims 11 and 17 are rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 4,712,100 by Tsunekuni (referred to hereinafter as “Tsunekuni”). The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Tsunekuni.

Independent Claim 11 recites “An optical navigation system comprising:

a coherent source for providing a first portion of a beam comprising a first wavelength and a second portion of a beam comprising a second wavelength onto a target surface;

a first detector for receiving a first reflection of said first portion of said beam from said target surface; and

a second detector for receiving a second reflection of said second portion of said beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections.”

Tsunekuni does not teach or suggest, “...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections,” as recited by Claim 11.

For example, at Col. 3 in the abstract, Tsunekuni states, ...optical systems each consisting of a light emitting section to emit the light flux onto this plate and a light receiving section to detect the reflection light flux from the plate.

Note that Tsunekuni teaches an optical system having a single light source and a single detector.

Further Tsunekuni teaches alternating white and black in order to reduce the amount of light detected by light receiving sections associated with adjacent optical systems. For example, at Col. 3 lines 35 to 45

Tsunekuni states,

...the light radiated from the light emitting section 9 all enters the light receiving section 14, while almost half of the lights emitted from other light emitting sections 5 and 6 are **absorbed by the black surface 2** ...Consequently, it will be understood that if the position of the operating

section 4 is deviated by merely a slight amount to the right or left (in the X-axis direction), **the optical system B won't be influenced at all** but the optical system A and C are shifted to the opposite states.

Therefore, Applicants respectfully submit that Claim 1 is patentable over Tsunekuni because Tsunekuni teaches away from "...individual light sources are configured to emit light having at least three different and distinct levels..." as recited by Claim 11.

Claim 17 depends on Claim 11 and includes all of the limitations of Claim 11. Therefore, Applicants respectfully submit that Claim 17 is patentable for the same reasons that Claim 11 is patentable.

Claims 21, 23, and 14

In paragraph 9 of the Office Action, Claims 21, 23, and 14 are rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 6,256,016 by Piot et al (referred to hereinafter as "Piot"). The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Piot.

Independent Claim 21 recites "An optical navigation system comprising:

a coherent source for providing a light beam incident onto a target surface;

a first detector for receiving a first portion of a reflection of said light beam from said target surface; and

a second detector for receiving a second portion of said reflection of said beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target

surface from signals generated by said first and second detectors in response to said first and second reflections.”

Piot does not teach or suggest, “an optical navigation system comprising: a coherent source ... a first detector ... and a second detector...,” let alone teach or suggest “the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections” as recited by Claim 21.

For example, at Col. 7 lines 38 to 41, Piot states, “The optical sensing assembly 260 comprises one or more optical elements 310, one or more photosensor arrays 320, a transparent printed circuit board 340, and molded fittings 350.” Assume for the sake of argument that Piot’s optical sensing assembly is analogous to the optical navigation system recited in Claim 21. Piot’s optical sensing assembly 260 does not include a coherent source. In fact, referring to FIG. 3 of Piot, Piot’s optical sensing assembly 260 could not be modified to include a coherent source 250 because Piot’s optical sensing assembly 260 requires the coherent source 250 to be external to the optical sensing assembly 260.

Therefore, Applicants respectfully submit that Claim 21 is patentable over Piot because Piot does not teach or suggest “an optical navigation system comprising: a coherent source ... a first detector ... and a second detector...,” among other things as recited by Claim 21.

Further, since Piot’s optical sensing assembly 260 does not include the coherent source 250 nor can it 260 be modified to include the coherent source 250 Piot cannot teach or suggest “the determination of the position of

said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections” since the first and second portions are derived from a light beam provided by the coherent source, among other things.

Claims 23 and 24 depend on Claim 21 and includes all of the limitations of Claim 21. Therefore, Applicants respectfully submit that Claims 23 and 24 are is patentable for the same reasons that Claim 21 is patentable.

Claims 1, 5, and 8

In paragraph 10 of the Office Action, Claims 1, 5, and 8 are rejected under 35 U.S.C. § 102(e) as being anticipated by US Patent No. 6,730,926 by Boillot et al (referred to hereinafter as “Boilott”). The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Boilott.

Independent Claim 1 recites “An optical navigation system comprising:

a light source for providing a light beam having a first wavelength incident onto a target surface;

a coherent source for providing a divergent beam having a second wavelength incident onto said target surface;

a first detector for receiving a second reflection of said light beam from said target surface; and

a second detector for receiving a second reflection of said divergent beam from said target surface to allow the determination of the position of said first and said second detector with respect to said target surface from

signals generated by said first and second detectors in response to said first and second reflections.”

Boillot does not teach or suggest, “...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections,” as recited by Claim 1.

For example, in the abstract Boilott states,

The position and orientation of the target object may be determined without moving the sensor head and **without knowing its position** and orientation. (emphasis added)

For the sake of argument assume that Boilott’s sensor heads are analogous to Claim 1’s detectors. Therefore, it is respectfully submitted that Claim 1 is patentable because Boilott teaches away from “...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections,” as recited by Claim 1.

Claims 5 and 8 depend on Claim 1 and includes all of the limitations of Claim 1. Therefore, Applicants respectfully submit that Claims 5 and 8 are patentable for the same reasons that Claim 1 is patentable.

103 Rejections

Claims 3, 4, and 6

In paragraph 12 of the Office Action, Claims 3, 4, and 6 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Boillot. The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Boillot.

As already stated herein, Claim 1 is patentable over Boillot. Claims 3, 4, and 6 depend on Claim 1 and include all of the limitations of Claim 1. Therefore, Claims 3, 4, and 6 should be allowable for the same reasons that Claim 1 should be allowable over Boillot.

Claims 2 and 9

In paragraph 13 of the Office Action, Claims 2 and 9 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Boillot in view of Piott. The Applicants have reviewed the cited references and respectfully submit that embodiments of the present invention are not taught or suggested by Boillot or Piott, alone or in combination.

Piott does not remedy the shortcomings in Boillot in that Piott does not teach or suggest "...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections," as recited by Claim 1.

Claims 2 and 9 depend on Claim 1 and includes all of the limitations of Claim 1. Therefore, Applicants respectfully submit that Claims 2 and 9 are patentable for the same reasons that Claim 1 is patentable.

Claim 7

In paragraph 14 of the Office Action, Claim 7 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Boillot in view of Tsunekuni. The Applicants have reviewed the cited references and respectfully submit that embodiments of the present invention are not taught or suggested by Boillot or Tsunekuni, alone or in combination.

Tsunekuni does not remedy the shortcomings in Boillot in that Tsunekuni does not teach or suggest "...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections," as recited by Claim 1.

Claim 7 depends on Claim 1 and includes all of the limitations of Claim 1. Therefore, Applicants respectfully submit that Claim 7 is patentable for the same reasons that Claim 1 is patentable.

Claim 10

In paragraph 15 of the Office Action, Claim 10 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Boillot in view of U.S. Patent No. 5,907,152 by Dandliker et al. (referred to hereinafter as "Dandliker"). The Applicants have reviewed the cited references and respectfully submit that embodiments of the present invention are not taught or suggested by Boillot or Dandliker, alone or in combination.

Dandliker does not remedy the shortcomings in Boillot in that Dandliker does not teach or suggest "...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections," as recited by Claim 1. In fact, the Office Action does

not claim that Dandliker teaches or suggest, "...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections," as recited by Claim 1.

Claim 10 depends on Claim 1 and includes all of the limitations of Claim 1. Therefore, Applicants respectfully submit that Claim 10 is patentable for the same reasons that Claim 1 is patentable.

Claims 12, 13, 15, 16, and 19

In paragraph 16 of the Office Action, Claims 12, 13, 15, 16, and 19 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsunekuni. The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Tsunekuni.

As already stated herein, Claim 11 is patentable over Tsunekuni. Claims 12, 13, 15, 16, and 19 depend on Claim 11 and include all of the limitations of Claim 11. Therefore, Claims 12, 13, 15, 16, and 19 should be allowable for the same reasons that Claim 11 should be allowable over Tsunekuni.

Claims 14, 18, and 20

In paragraph 17 of the Office Action, Claims 14, 18, and 20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsunekuni in view of Piot. The Applicants have reviewed the cited references and respectfully submit that embodiments of the present invention are not taught or suggested by Tsunekuni or Piot, alone or in combination.

Piot does not remedy the shortcomings in Tsunekuni in that Piot does not teach or suggest "...the determination of the position of said first and said second detector with respect to said target surface from signals generated by said first and second detectors in response to said first and second reflections," as recited by Claim 11.

Claims 14, 18, and 20 depend on Claim 11 and includes all of the limitations of Claim 11. Therefore, Applicants respectfully submit that Claims 14, 18, and 20 are patentable for the same reasons that Claim 11 is patentable.

Claim 22

In paragraph 18 of the Office Action, Claim 22 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Piot. The Applicants have reviewed the cited reference and respectfully submit that embodiments of the present invention are not taught or suggested by Piot.

As already stated herein, Claim 21 is patentable over Piot. Claims 22 depends on Claim 21 and include all of the limitations of Claim 21. Therefore, Claim 22 should be allowable for the same reasons that Claim 21 should be allowable over Piot.

Conclusions


In light of the above remarks, Applicants respectfully request reconsideration of the rejected claims.

Based on the arguments presented above, Applicants respectfully assert that Claims 1-24 overcome the rejections of record and, therefore, Applicants respectfully solicit allowance of these claims.

The Examiner is invited to contact Applicants' undersigned representative if the Examiner believes such action would expedite resolution of the present Application.

Date: 11/15/05

Respectfully submitted,
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